

Unit 3: Breathing

Name _____

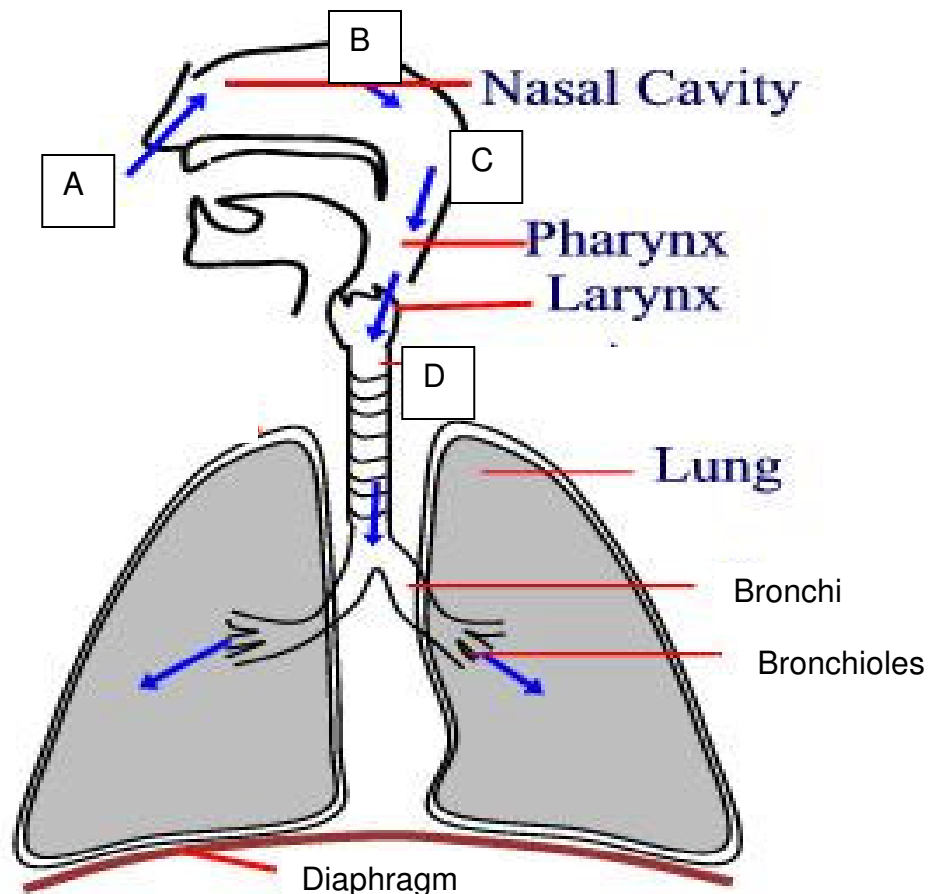
How Some Organisms Take In Oxygen

<u>Type</u>	<u>Picture of Breathing</u>
One- Celled (Paramecium)	
Complex Organisms (Worm, Human)	
Gills	

Our Respiratory System

Figure 16-3 (p.488)

A
B
C
D



Functions of Respiratory Organs

Read p. 489 and fill in the blanks below.

The _____, are the main organs of your respiratory system. Here in the lungs, the exchange of _____ and _____ takes place. Within your lungs, the _____ branch into increasingly smaller and smaller pathways. At the ends of the narrowest tubes are clusters of tiny, thin-walled sacs called _____. Imagine a tight _____. Your alveoli are surrounded by _____. The exchange of _____ and _____ takes place between the _____ and _____ in your body. Oxygen and carbon dioxide pass easily, or _____, through the thin walls of the alveoli.

Boyle's Law

What does it say?

Read p. 492 and fill in the blanks below.

The size of your chest _____ as air _____ of your lungs. Something in your chest cavity _____ or _____ on your lungs. These pressure changes are caused by you _____, a _____.

Figure 16-6 (p. 493)

Inhaling	
A	
B	

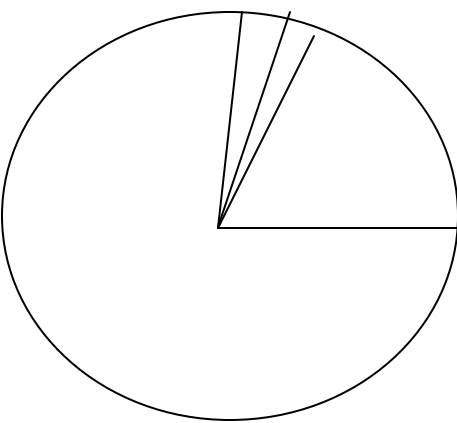
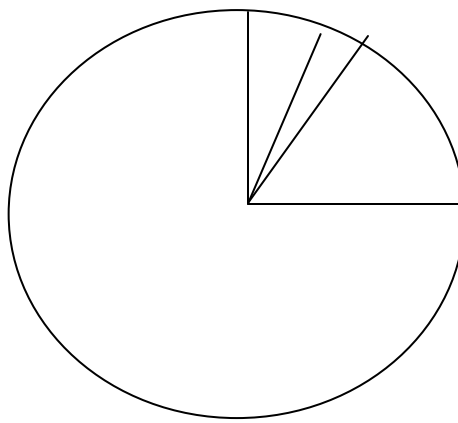
Figure 16-6 Continued...

Exhaling	
C	
D	

How Oxygen Gets to All Parts of Your Body (p.494-500)

Hemoglobin	
What is it?	How does it work?

Comparing Air Inhaled with Air Exhaled

Inhaled Air	Exhaled Air
	

Cellular Respiration

Your body needs energy to operate...

LAB

Breathing and Carbon Dioxide (p.498-499)

Is the amount of carbon dioxide you exhale also related to your body's level of activity?

We will test this by using a chemical called Bromothymol Blue, which turns color when carbon dioxide is added to it.

Problem

How does exercise affect the amount of carbon dioxide exhaled by the lungs?

Hypothesis

Discuss with your team the answer to this question:

Will exercise affect the amount of carbon dioxide you exhale? How?
(Hint: your hypothesis should be in a "If...then..." statement)

Objectives

- ✓ Predict the effect of exercise on the amount of carbon dioxide exhaled.
- ✓ Recognize the cause and effect relationship between exercise and amount of carbon dioxide exhaled.

Plan your experiment

As a class we will conduct the experiment. However, I want to know how each team thinks we should conduct our experiment. As a team, discuss the problem and how you think we could solve the problem. After you discuss your experiment with your team, we will compile the ideas and come up with one “master” experiment. I will then ask for two or three volunteers to conduct the experiment the next day in class.

Use this information to aide in your team’s planning:
<ul style="list-style-type: none">✓ Bromothymol blue solution turns green and then yellow as carbon dioxide is added to it.✓ You may want to look at the amount of time it takes for the color change to occur under different circumstances. What will you want to keep constant? What will change?✓ Write out your plan and design a data table so you have a place to record data.✓ Would the amount of solution make a difference in your tests? Would it matter who was doing the exercise and exhaling for each test?

Write your procedure here:

- 1) How will you use the bromothymol blue solution? In other words, what will it help you find?
- 2) What will be kept constant during each trial?
- 3) What will change during each trial? (Hint: We will do three trials.)
- 4) Procedure: (A step by step process to answer a problem)

Use this space to
continue your procedure,
if needed.

Analyze and Conclude

1. Were you able to determine a difference in the amount of carbon dioxide exhaled before and after exercise? How can you tell?

2. Why does exercising cause you to breathe faster than usual?

3. Draw a conclusion about the experiment. Does exercising affect your breathing and why?